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6 MR. BELLER: Good afternoon, ladies and
7 gentlemen. I'm Denis Beller. I work at the Harry Reid
8 Center for Environmental Studies at the University of
9 Nevada, Las Vegas. "Foreign Affairs," the world's most
10 influential economic and foreign policy journal printed
11 an essay titled, "The need for Nuclear Power" in
12 January of 2000. Dr. Richard Rhodes, a Pulitzer prize
13 winning historian and journalist was the lead author of
14 that paper. The essay has been entered in the
15 Congressional Record, it has been widely cited in
16 national and international publications, and it is used
17 as a reference for decisions by the Nuclear Regulatory
18 Commission. I am the second author of that paper. I
19 will attach an annotated copy to my written statement
20 for entry in the official record, because it highlights
21 the need for, and worldwide environmental and health
22 benefits of nuclear power, which places the need for
23 these hearings in context with national and global
24 energy needs.

25 The need for additional electricity supply

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1 was recently highlighted by analysis of a report from

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2 the United Nations. Dr. Alan Pasternak of the
3 University of California correlated the U.N.'s human
4 development index with per capita electricity use for
5 95 percent of the world's population. A low value of
6 this index which is found for most of the population is
7 associated with poor human conditions. Illiteracy,
8 poverty, poor health, and early death.

9 His correlation shows that human health and
10 well being depend on electricity, and that the current
11 alternative is worldwide suffering. For most of the
12 people in the world, with minimal access to
13 electricity, the index increases rapidly with small
14 increases of electricity supply. Yet, the average
15 citizen of these nations can expect to die 10 to 25
16 years earlier than you and I. Thus, the global lack of
17 electricity means billions of people die decades before
18 they should.

19 We can conclude from Dr. Pasternak's analysis
20 that poverty is thousands of times more dangerous than
21 explosions from natural gas, spills of oil, emissions
22 from coal plants, and nuclear waste.

23 Most practical people now understand that the
24 less fortunate peoples of the world must and will

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25 increase their electricity usage. The suppliers of
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1 that energy and their governments will determine its
2 impact on the economy and the environment. During the
3 last decade, under deregulation, the U.S. nuclear
4 industry has increasingly demonstrated that it is the
5 cleanest, safest and most environmental major source of
6 electricity. It is also affordable, reliable, and
7 sustainable.

8 These six attributes, clean, affordable,
9 reliable, environmental, safe, and sustainable, make up
10 the acronym, CARESS. Because these attributes
11 characterize today's U.S. nuclear power industry,
12 national leaders, the national press, Wall Street, and
13 business leaders widely recognize that we are in the
14 midst of a nuclear renaissance. That is why Vice
15 President Dick Cheney's energy studies group chose to
16 CARESS nuclear energy in its recent report.

17 Recent publicity in the national press also
18 tells us about the U.S. industry's plans for the
19 additional new capacity. First, the operating
20 lifetimes of reactors are being extended, taking
21 existing U.S. nuclear power beyond the middle of this

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22 century. In addition, most nuclear reactors will
23 increase capacity equivalent to building 10 new nuclear
24 power plants. These two actions alone will increase
25 the generation of used nuclear fuel from existing
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1 reactors by more than 50 percent.

2 The highly consolidated, privatized and
3 deregulated nuclear power industry is already making
4 plans to begin construction beginning in about 2005, to
5 add another 50,000 megawatts of new capacity at
6 existing power plants by 2020 and to build even more
7 through at least 2050. With 60-year lifetimes, the
8 newest of these reactors will still be operating and
9 generating used nuclear fuel more than 100 years from
10 today.

11 But who will design, build and operate the
12 new generation of nuclear power plants that we need
13 today? Recent reports such as in "Business Week," and
14 the "Christian Science Monitor," have detailed a severe
15 shortage of college graduates for the existing nuclear
16 power industry, because of a precipitous decline in the
17 infrastructure for educating nuclear scientists and
18 engineers. A year ago, undergraduate and graduate

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19 nuclear engineering student populations were the lowest
20 in more than three decades. We also need new nuclear
21 scientists, engineers and facilities for monitoring the
22 activities of other nations, and terrorist
23 organizations, for stopping the proliferation of
24 nuclear weapons, for conducting nuclear R&D and for
25 industrial applications.

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1 In addition to this infrastructure challenge
2 for the next two decades, the emerging global nuclear
3 renaissance presents us with the challenge of greatly
4 increased generation of used nuclear fuel. The result
5 of the renaissance that I described without a new
6 management philosophy is in excess of 120,000 tons of
7 used nuclear fuel by 2030 in the U.S. alone. And
8 millions of tons globally by the middle of this
9 century.

10 But students, faculty and research scientists
11 at the University of Nevada Las Vegas are already
12 investigating a new technology and a different
13 philosophy for management of this valuable material.
14 With the support of Senator Harry Reid to provide
15 funding from the U.S. Department of Energy, UNLV has

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16 begun research on accelerator-driven transmutation,
17 which is a process of causing additional nuclear
18 reactions in long-lived radioactive materials to turn
19 them into short-lived or even nonradioactive isotopes.

20 The three topics that I discussed today, the
21 need for nuclear power, the need for revitalizing our
22 national nuclear infrastructure, and the need for a
23 national management capability for nuclear waste that
24 will be created during the nuclear renaissance offered
25 the state of Nevada a unique opportunity. We must note

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1 that a national repository for high-level radioactive
2 waste is a key element of that management capability
3 for any nuclear future, including nuclear closeout.

4 MODERATOR BROWN: About a minute left.

5 MR. BELLER: Southern Nevada, led by the
6 University of Las Vegas, can take this opportunity to
7 become the world leader in ensuring the safe,
8 economical and environmental management of used nuclear
9 fuel. Nevada can create a new national nuclear science
10 center, some might call it a national center of
11 excellence for repository science, for recycling used
12 nuclear fuel, for reusing this valuable resource, and

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13 for reducing the amount of waste that needs disposal,
14 as well as the radiotoxicity of that waste. We can
15 create the science and technology necessary for
16 recycling uranium, higher actinides like neptunium and
17 plutonium and other radioisotopes. We can reuse rather
18 than discard the transuranium isotopes by extracting
19 electricity from the fuels. We can use other isotopes
20 to conduct nuclear medical research in Nevada
21 universities and to diagnose and treat diseases like
22 osteoporosis and cancer in Nevada hospitals, and we can
23 use other isotopes for an ever-expanding array of
24 industrial radiation applications. These applications
25 include manufacturing, oil and gas exploration,

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1 irradiation to sterilize hundreds of consumer products
2 and most medical equipment, and irradiation of food as
3 well as livestock feed to eliminate pathogens like
4 Listeria, hoof and mouth, and E. Coli.

5 Simultaneously with this recycling and reuse
6 of nuclear materials, we can reduce the toxicity and
7 volume of the waste, as well as quantities of materials
8 that could be used for proliferation of nuclear weapons
9 centuries or millennia from now.

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10 Reduce, reuse, recycle. In conclusion, the
11 citizens of Nevada are in a position to take the
12 fullest advantage of this opportunity to create a
13 national center of excellence for management of this
14 material to reduce its legacy for our descendants and
15 to reduce its impact on the environment, all funded by
16 the federal government.